

REMARKS/ARGUMENTS

In response to the FINAL Office Action of April 20, 2005, and telephonic interview conducted with Examiner Metzmaier of July 20, 2005, Applicant requests re-examination and reconsideration of this application for patent pursuant to 35 U.S.C. 132.

First, Applicants would like to thank the Examiner for the courtesies extended during the aforementioned telephonic interview of July 20, 2005.

Applicants called Examiner Metzmaier to elucidate items #8 and #14 set forth the final office Action (April 20, 2005).

In item #8, claims 6-7 and 10-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Holland et al., (USP 5,158,349) and Ladyjensky (USP 5,370,828) as applied to claims 1-5, 7 above [sic], and further in view of Narayan et al., (USP 5,409,751), Bloembergen et al., (USP 5,462,983) and Suzuki (USP 5,409,751).

However, claim 1-5 and 7 were cancelled in the Response (January 21, 2005). This is unclear as claims 1-5, and 7 were not pending at the time of Final rejection (April 20, 2005). The Examiner indicated that this was merely an error and the rejection of claims 6-7, 10-11 stands under 35 U.S.C. 103(a) as set forth in the Final office action (April 20, 2005).

In Item #14 of the Final office action, the Examiner asserts that the anticipation rejection over Holland et al., (USP

5,158,349) and Ladyjensky (USP 5,370,828) has been withdrawn in view of application's amendment to claim 10, defining the polymer as a starch/polyolefin combination.

This is confusing as there was no prior anticipation rejection of claim 10 over the Holland et al., (USP 5,158,349) and Ladyjensky (USP 5,370,828), as claim 10 was newly added in Applicant's Response (filed on January 21, 2005).

In the interest of compact, efficient prosecution it is hereby respectfully requested the Examiner contact the Applicants, if Applicants have misinterpreted any of the ground of rejections set forth in the Final office action (April 20, 2005).

In order to provide the Examiner an opportunity to fully consider all of the issues, a Request for Continuing Examination is filed concurrently herewith.

Claim Status/ Support for Amendments

Claims 7, 8 and 12 have been amended and remain pending in this application. Claims 1-5 were cancelled in a previous Response (filed January 21, 2005). Claims 6, and 9-11 are cancelled herein. Claims 13-20 are new.

No new matter has been added by the amendments to the specification.

The paragraph containing TABLE 1 at page 12 of the instant specification was amended to correct a typographical error. The term "polyenlketone" has been corrected to --polyetherketone--. Support can be found as the corresponding abbreviation "PEK" under the "Abbreviation" column in TABLE 1 at page 12. PEK is well known in the chemical art to denote polyetherketone. In addition, the properties of the PEK polymer are disclosed in the specification as originally filed under the "Description" column in TABLE 1, these properties are consistent with polyetherketone, therefore, the correction should not be construed as new matter.

No new matter has been added by the amendments to claims 7-8 and 12.

Claim 7 has been amended to change dependancy from cancelled claim 6 to claim 13. Additionally, the phrase "chemiluminescent light producing" has been removed to provide proper antecedent basis for the chemical system recited in claim 13.

Claim 8 has been amended to incorporate the limitations of claim 9, as indicated allowable by the Examiner in item #'s 10 and 11 of the Final office action (April 20, 2005). Additionally, the phrase "reasonable amount of time" has been removed as the term "biodegradable" does not depend on the amount of time, as set forth in the remarks below.

In claim 12, the dependancy was amended to depend from independent claim 13.

No new matter has been included with the addition of new claims 13-20. The subject matter of new claims 13-14 can be found in previously pending claims 6, 9, 10 and throughout the specification, see for instance beginning at page 11, line 17; Example 1 at page 16. New claims 15-16 find support in previously pending claims 7, 12, respectively. New Claim 17 finds support within the specification in Example 3, beginning at page 18. Claim 20 finds support at page 11, lines 5-16.

The Examiner has indicated that claim 9 would be allowable if rewritten to include all claims from which it depends. The Examiner is hereby thanked for the indication of allowable subject matter. As suggested by the Examiner, the subject matter of claim 9 has been incorporated into independent claims 8, 13, 14 and 17. Accordingly, these claims and all dependant claims are now in condition for allowance.

Objections to the Specification:

The disclosure stands objected to because of the following informalities: Examiner asserts that applicants should check the term "polyenlketone" for spelling or clarify the structure therefore. Appropriate correction is required.

Applicants have corrected all recitation of the typographical error "polyenlketone" with --polyetherketone--. As discussed above, PEK is well known abbreviation for polyetherketone, moreover, the disclosed properties of the PEK polymer in TABLE 1, page 12, are consistent with polyetherketone. Therefore, it is respectfully requested that the objection to specification be withdrawn.

Objections to the Claims:

Claims 6 and 7 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

The Examiner states that claims 6 and 7 are alternatively objected to as not further limiting or rejected as new matter since the original disclosure fails to contain a disclosure of the combination of the polymers "at least one polymer of polyglycolic . . . polyenlketone" with "starch/polyolefin combination". Claim 10 sets forth the polymeric composition is formed from a water soluble starch/polyolefin combination.

Claims 6 and 10 have been cancelled herein, thus, rendering this objection and/or rejection moot and therefore should be withdrawn.

Rejections under 35 USC 112

Claims 6-7 and 10-12 (as previously presented) stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) allegedly contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Examiner contends that claim 10, as previously presented, defines a "water soluble starch/polyolefin combination" but the original disclosure fails to disclose a "water soluble starch/polyolefin combination". The Examiner asserts that while the starch may be water soluble, nowhere does the original disclosure disclose the water solubility of the "starch/polyolefin combination".

Claim 10 is hereby cancelled. The subject matter of claim 10 has been incorporated into new claim 14.

Applicants respectfully disagree with the Examiner's position. However, although Applicants believe that the phrase "water soluble starch/polyolefin combination" as originally written is fully supported by the instant specification as originally filed, in the interest of compact, efficient prosecution the phrase "water soluble" has been removed to clearly recite a starch/polyolefin combination, thereby rendering this rejection moot.

Claims 6 and 7 stand rejected, since claim 6 (previously dependant on claim 10) defined the outer containment polymer as "at least one polymeric material selected from the group consisting of polyglycolic . . . polyenlketone". Claim 10 set forth the polymeric composition is formed from a water soluble starch/polyolefin combination.

As discussed above claims 6 and 10 have been cancelled. None of the currently pending claims currently define a polymer blend of "polymeric material selected from the group consisting of polyglycolic acid, polyactic acid, polycaprolactone, polyhydroxybutyrate, polyhydroxyvalerate, polyvinyl alcohol, polyvinyl acetate, and polyetherketone" with a "water soluble starch/polyolefin combination".

Applicants respectfully submit that the specification, as originally filed, was described in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Thus, Applicants respectfully request that this rejection under 35 USC 112, first paragraph, now be withdrawn.

Claims 8-9 as previously presented stand rejected under 35 U.S.C. 112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner alleges that the claimed compositions and articles are indefinite since it is unclear what are the metes and bounds of the claimed limitations; "particularly susceptible to environmental degradation", "disintegratable", "partially biodegradable", and "biodegradable". The Examiner contends that the definitions at page 10, lines 1-8, set forth in the instant specification, are not set forth in the instant claims and are unclear as to their metes and bounds. "Disintegrates" is defined as a material which self disintegrates so as to lose its physical form. It is allegedly unclear to the Examiner what applicants mean by the term "self disintegrates", e.g., in a natural environment, in air, in water such as the ocean, in acidic environment, in a basic environment, in an inert environment. At

page 8, lines 9-10, applicants set forth that normal plastics degrade very slowly. The Examiner sees no distinction between the terms "degrade" and "disintegrates". "Biodegradable" is defined as a material of whose component parts re-enter the food chain within a reasonable period time. It is unclear what applicants intend as a "reasonable amount of time" in claim 8. The Examiner further states that "re-entering the food chain" means that the component can be utilized as a raw material (food) by either plants and/or bacteria.

Specifically, the Examiner asserts that none of said definitions define a time-frame, which said definitions are clearly dependent, e.g., a day, a week, a year, a century, a millennium. Thus, it is unclear what the scope of the claims are since no timeframe for "particularly susceptible to environmental degradation", "disintegratable", "partially biodegradable", and "biodegradable" is set forth.

Applicants respectfully disagree with the Examiner's assertions. The limitations "particularly susceptible to environmental degradation"; "partially biodegradable"; "reasonable amount of time" are not recited in any of the currently pending claims. Applicants are not required to clarify limitations in the specification that are not claimed.

Applicants point Examiner's attention to Example 1 at page 16, lines 9-21 of the originally filed specification, which discloses a time-frame for one embodiment of a polymer combination that "disintegrates" but does not "biodegrade". In this example the polymer composition is made from a starch /polyolefin combination, wherein the polyolefin component will remain unaffected over a long period of time (decades). Thus, it would be concluded by one having ordinary skill in the art that the term "disintegratable" as defined at page 10, lines 1-2, and page 10, line 18, refer to a material that loses its physical (coherent) form within a time-frame, that being, decades. However, no one can say with any certainty that a particular polymer will disintegrate within a particular time period.

It is well settled in patent law that the disclosure of a patent application is directed to one having ordinary skill in the art and as a corollary there are certain terms which are considered terms of art with acknowledged meanings to those in the art.

The well established term, "biodegradable," is notoriously well-known in the art to distinguish polymers which are consumed by microorganisms (e.g., bacteria, fungi, algae, etc.) from the conventional polymers unable to be consumed. According to the web site webster.com the term "biodegradable" is defined as

capable of being broken down especially into innocuous products by the action of living things (as microorganisms), see attached printout from webster.com. The "time frame" is not required for the term to be definite. Moreover, the rate at which a particular biodegradable polymer will disappear in a particular time period depends on natural forces (e.g., environment) and will not exist for as long as conventional plastics, i.e. polyethylene, polyethylene terephthalate (PET) or polyesters. At lines 1-5 of page 6, the life span of "normal" conventional polymers used in chemical light devices are described as practically non-biodegradable due to the plastic utilized in their construction. Polyolefins will exist for hundreds of years in the normal environment without losing a significant portion of their physical properties.

The Examiner should appreciate that a biodegradable polymer will be consumed at different rates of time depending on the location in the world. That is to say, a biodegradable polymer placed in the warmer climates (i.e., tropics) will be consumed by microorganisms present at different rate than the same biodegradable polymer in colder climates (i.e., arctic). Thus, a time frame for disappearance is not determinative of biodegradability, but rather it depends on its ability to be consumed by microorganisms that distinguishes these polymers.

The instant application makes a further distinction between biodegradation and disintegration by defining various terms, including biodegradable polymers as re-entering the food chain. Also, the term, "self disintegrates," attempts to denote a polymer that disintegrates on its own regardless of the environment. Wherein, the instant devices are adapted to disintegrate within a reasonable time of their use for their intended purpose, see lines 7-10, page 8 of the specification. Thus, a person of ordinary skill in the art upon reviewing the instant application would know what is meant by the terms "disintegrates" and "biodegrades" as used in the instant claims.

Accordingly, Applicants have now clarified the metes and bounds of the claims and respectfully request that the above-discussed rejection under 35 USC 112, second paragraph, be withdrawn.

Rejection under 35 USC 103(a)

Claims 6-7 and 10-11 as previously presented are now rejected as obvious in view of Holland et al, Ladyjensky, Narayan, Bloembergen, and Suzuki et al. Claims 6-7 previously depended from claim 10.

Claims 6, 10 and 11 have been cancelled herein.

New claim 13 incorporates the polymeric material of cancelled claim 6 and 9. New Claim 13 recites a chemiluminescent light producing device comprising a biodegradable polymeric composition forming an outer containment device enclosing at least one inner frangible vial.

New claim 14 recites a chemiluminescent light producing device comprising a polymeric composition that disintegrates so as to lose its physical form. The polymeric composition comprises a starch/polyolefin combination whereby said polymeric composition is capable of disintegrating.

New claim 17 recites a chemiluminescent light producing device comprising a polymeric composition that is photodegradable so as to lose its physical form, said polymeric composition comprises photodegradable polymers that include UV sensitive components, whereby said ultraviolet (UV) sensitive components photodegrade when subjected to ultraviolet (UV) light.

Claims 13, 14 and 17, currently disclose the outer containment device and vial each containing a chemical system comprising an oxalate component and a peroxide component, separately, and producing visible light when intermixed in the polymeric outer containment device. The oxalate component comprising a 50/50 mixture of propylene glycol dibenzoate and acetyltributyl citrate (claim 9).

Holland and Ladyjensky both teach light sticks with frangible inner vials and "normal" polymeric (e.g., polyethylene, polypropylene and PET) outer containers. The normal polymeric outer containers are in intimate contact with either the liquid peroxide component or the liquid oxalate component for long periods of time between assembly and final consumption, and an admixture of the two components are present in the outer container when in use.

Bloembergen, Narayan and Suzuki are relied upon for using "degradable" polymers for making films and/or containers.

The Examiner indicated in Item # 11 of the Final office action (April 20, 2005), that the cited prior art fails to teach or suggest the particular oxalate solvent combination, specifically, a 50/50 mixture of propylene glycol dibenzoate and acetyltributyl citrate, as recited in previously presented claim 9.

The particular oxalate solvent of previously presented claim 9 has now been included into new independent claims 13, 14 and 17 as set forth above. Thus, none of the aforementioned references recite the use of an oxalate solvent combination, that being a 50/50 mixture of propylene glycol dibenzoate and acetyltributyl citrate, thereby, rendering this rejection moot.

Claim 8 as previously presented stands rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Chopdekar et al, 5,597,517.

The Chopdekar et al., reference (column 4, line 13; examples and claims) discloses a biodegradable chemiluminescent light producing system, which may employ the use of a benzoate ester, i.e., ethyl benzoate.

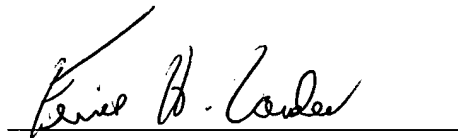
Claim 8 has been amended to incorporate the allowable subject matter of previously presented claim 9. Thereby rendering this rejection moot.

Thus, it is respectfully submitted that all the known prior art fails to teach or suggest to one of ordinary skill in the art the elements of the invention as specifically set forth in the instantly amended claims. Accordingly, Applicants respectfully submit that the claimed embodiments of the chemiluminescent light producing devices distinguishes over the prior art and respectfully request that these rejections under 35 USC 103(a) now be withdrawn.

SUMMARY

In light of the foregoing remarks and amendment to the claims, it is respectfully submitted that the Examiner will now find the claims of the application allowable. Favorable reconsideration of the application is courteously requested.

Respectfully submitted,

A handwritten signature in cursive script, reading "Ferris H. Lander", is written over a horizontal line.

Ferris H. Lander
Registration # 43,377

McHale & Slavin, P.A.
2855 PGA Boulevard
Palm Beach Gardens, FL 33410
(561) 625-6575 (Voice)
(561) 625-6572 (FAX)



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One entry found for **biodegradable**.

Thesaurus

Main Entry: **bio·de·grad·able**

Pronunciation: -di-'grA-d&-b&l

Function: *adjective*

: capable of being broken down especially into innocuous products by the action of living things (as microorganisms)
<biodegradable trash bags>

- **bio·de·grad·abil·i·ty** /- "grA-d&- 'bi-l&-tE/ *noun*

- **bio·deg·ra·da·tion** /- "de-gr&- 'dA-sh&n/ *noun*

- **bio·de·grade** /-di-'grAd/ *verb*

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